

CLAIMS

1. A process for foaming polyurethanes comprising: adding to compositions used to make solid polymers azeotropic or near azeotropic foaming agents compositions as substitutes for CFC 11 to give a homogeneous foam having density of about 30 Kg/cm³, said foaming agent compositions based on di-fluoromethoxy-bis(difluoromethyl ether) and/or 1-difluoro-methoxy-1,1,2,2-tetrafluoroethyl difluoromethyl ether, said foaming agent compositions essentially selected from the group consisting of:

| | | Composition % by weight |
|-----|--|----------------------------|
| IV) | difluoromethoxy bis(difluoromethyl ether) (HCF ₂ OCF ₂ OCF ₂ H); | 1-99 |
| | 1,1,1,3,3-pentafluorobutane (CF ₃ CH ₂ CF ₂ CH ₃ , HFC 365mfc) | 99-1 |
| V) | difluoromethoxy bis(difluoromethyl ether) (HCF ₂ OCF ₂ OCF ₂ H); | 1-40 |
| | 1,1,1,4,4,4-hexafluorobutane (CF ₃ CH ₂ CH ₂ CF ₃ , HFC 365ffa) | 99-60 |

wherein the difluoromethoxy-bis(difluoromethyl ether) part contains up to 40% by weight of 1-difluoromethoxy-1,1,2,2-tetrafluoroethyl difluoromethyl ether.

2. The process of claim 1, wherein said foaming agent compositions are selected from the group consisting of:

| | | composition % by weight |
|-----|--|----------------------------|
| IV) | difluoromethoxy bis(difluoromethyl ether) (HCF ₂ OCF ₂ OCF ₂ H); | 10-98 |
| | 1,1,1,3,3-pentafluorobutane (CF ₃ CH ₂ CF ₂ CH ₃ , HFC 365 mfc) | 90-2 |
| V) | difluoromethoxy bis(difluoromethyl ether) (HCF ₂ OCF ₂ OCF ₂ H); | 10-40 |
| | 1,1,1,4,4,4-hexafluorobutane (CF ₃ CH ₂ CH ₂ CF ₃ , HCF 356 ffa). | 90-60 |

3. The process of claim 1, wherein said foaming agent compositions are selected from the group consisting of:

| | | composition % by weight |
|----|---|----------------------------|
| D) | difluoromethoxy bis(difluoromethyl ether) ($\text{HCF}_2\text{OCF}_2\text{OCF}_2\text{H}$); | 60 % by wt. |
| | 1,1,1,3,3-pentafluorobutane ($\text{CF}_3\text{CH}_2\text{CF}_2\text{CH}_3$, HFC 365 mfc) | 40 % by wt. |
| E) | difluoromethoxy bis(difluoromethyl ether) ($\text{HCF}_2\text{OCF}_2\text{OCF}_2\text{H}$); | 20 % by wt. |
| | 1,1,1,4,4,4-hexafluorobutane ($\text{CF}_3\text{CH}_2\text{CH}_2\text{CF}_3$, HCF 356 ffa). | 80 % by wt. |

4. The process according to claim 1, wherein said compositions are added in amounts in the range 1-15% by weight on the total preparation.

5. The process according to claim 1, wherein said compositions are used in combination with H_2O and/or CO_2 .

6. The process according to claim 5, wherein the water amount is in the range 0.5-7 parts by weight on one or hundred parts of polyol.

7. The process according to claim 5, wherein the CO_2 amount is in the range 0.6-10 parts by weight on one hundred parts of polyol.

8. The process according to claim 5, wherein stabilizers for radicalic decomposition reactions are added, the concentration of which is in the range 0.1-5% by weight with respect to the foaming agent.

9. Polyurethane polymer foaming compositions comprising, as blowing agent substitutes of CFC-11 to give a homogeneous foam having density of about 30 Kg/cm³, foaming agent azeotropic or near azeotropic compositions selected from the group consisting of:

| | composition % by weight |
|--|----------------------------|
| IV) difluoromethoxy bis(difluoromethyl ether) (HCF ₂ OCF ₂ OCF ₂ H); 1,1,1,3,3-pentafluorobutane (CF ₃ CH ₂ CF ₂ CH ₃ , HFC 365 mfc) | 1-99 99-1 |
| V) difluoromethoxy bis(difluoromethyl ether) (HCF ₂ OCF ₂ OCF ₂ H); 1,1,1,4,4,4-hexafluorobutane (CF ₃ CH ₂ CH ₂ CF ₃ , HCF 356 ffa). | 1-40 99-60 |

wherein the difluoromethoxy-bis (difluoromethyl ether) parts contains up to 40% by weight of 1-difluoromethoxy-1,1,2,2-tetrafluoroethyldifluoromethyl ether.

10. Polyurethane polymer foaming compositions according to claim 9 comprising foaming agent selected from the group consisting of:

| | composition % by weight |
|--|----------------------------|
| D) difluoromethoxy bis(difluoromethyl ether) (HCF ₂ OCF ₂ OCF ₂ H); 1,1,1,3,3-pentafluorobutane (CF ₃ CH ₂ CF ₂ CH ₃ , HFC 365 mfc) | 60 % by wt. 40 % by wt. |
| E) difluoromethoxy bis(difluoromethyl ether) (HCF ₂ OCF ₂ OCF ₂ H); 1,1,1,4,4,4-hexafluorobutane (CF ₃ CH ₂ CH ₂ CF ₃ , HCF 356 ffa). | 20 % by wt. 80 % by wt. |